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UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
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CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

4601806238

MATHEMATICS

Paper 2

1112/02

April 2012

60 minutes

Candidates answer on the Question Paper.

Additional Materials: Geometrical Instruments
Tracing paper
Calculator

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use a soft pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.

DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.

You should show all your working in the booklet.
The number of marks is given in brackets [ ] at the end of each question or part question.
The total number of marks for this paper is 50.

For Examiner's Use	
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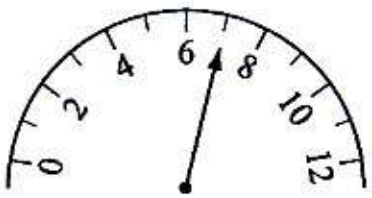
Total	

This document consists of **13** printed pages and **3** blank pages.

UNIVERSITY of CAMBRIDGE International Examinations

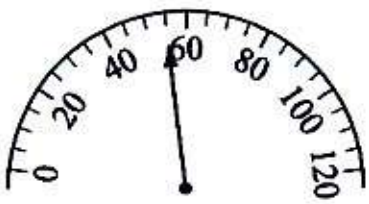
1 Write the mass shown on each scale.

(a)



7 kg [1]

(b)



55 g [1]

2 Write the following numbers in order, starting with the smallest.

0.395	0.4	0.38	0.3	0.388
0.3	0.38	0.388	0.395	0.4
smallest				largest

[1]

3 (a) Work out 35% of $275

$\frac{35}{100} \times 275$

$ 96.25 [2]

(b) A shopkeeper buys a dress for $40
She sells it for $48

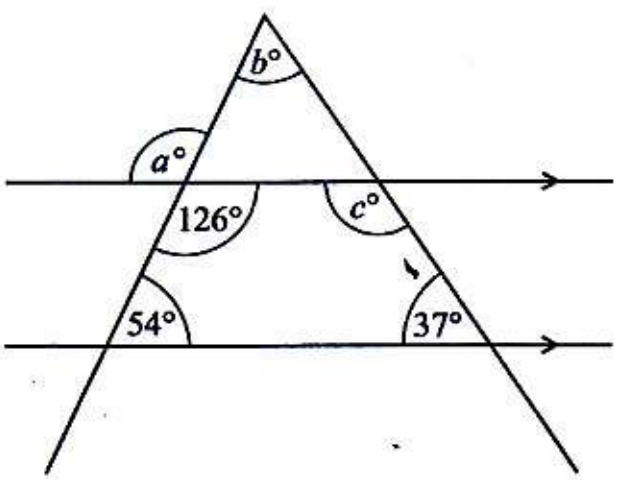
Work out the percentage increase in the price of the dress.

Profit = 48 − 40 = $8

% profit = $\frac{8}{40} \times 100\%$

20 % [2]

4 Work out the values of a, b and c.



NOT TO SCALE

$a =$ 126 [1]

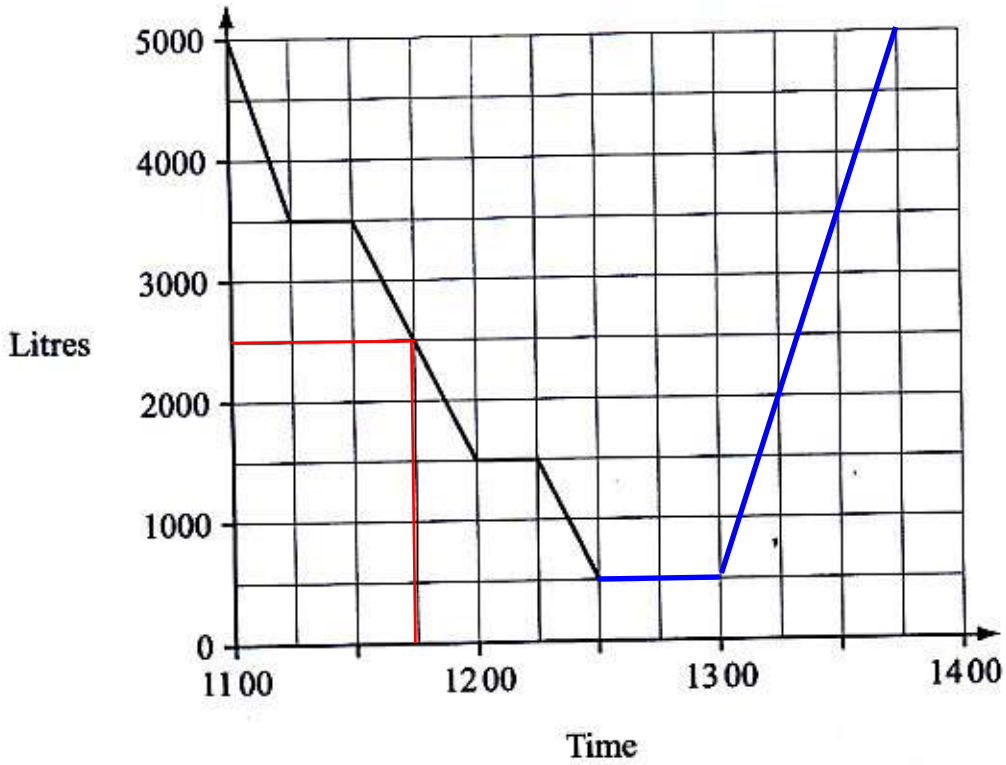
$b =$ 89 [1]

b + 54 + 37 = 180

C + 37 = 180

$c =$ 143 [1]

5 A water tank holds 5000 litres of water when full.
The graph shows the amount of water in the tank between 11 00 and 12 30.



(a) At 11 00 the tank is full.
Write down

(i) how much water is **used** between 11 00 and 12 30.

5000 - 500

4500 ..... litres [1]

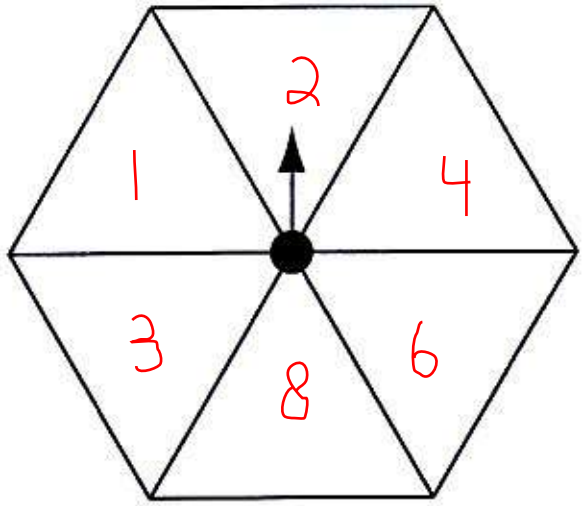
(ii) the time at which there is 2500 litres in the tank.

11.45 ..... [1]

(b) No water is used after 12 30.
At 13 00 the tank is then refilled at a constant rate.
It is full again by 13 45.

Show this information on the graph. [2]

6 A fair spinner is in the shape of a regular hexagon.



(a) Write a number on each section so that the probability of getting an odd number is $\frac{1}{3}$.

2 odd numbers

4 even numbebers

[1]

(b) What is the probability of **not** getting an odd number?

$\frac{4}{6}$

$\frac{2}{3}$ [1]

7 The table shows information about the number of boys and girls in Class A and Class B.

Complete the table.

	Class A	Class B	Total
Boys	14	18	32
Girls	13	11	24
Total	27	29	56

[2]

8 Expand $4b(a - 3)$.

$4ab - 12b$ [1]

9 (a) Write down the next two terms in this sequence.

1, 3.5, 6, 8.5, 11, 13.5 [1]

+2.5 +2.5 +2.5 +2.5 +2.5

(b) Explain how you worked out the next two numbers in part (a).

add 2.5 to get the next term [1]

10 Write this number

683.459

(a) correct to 2 decimal places, 683.46 [1]

(b) correct to 2 significant figures. 680 [1]

11 Ten students take tests in both mathematics and science.
The table shows their test scores.

Student	A	B	C	D	E	F	G	H	I	J
Mathematics	12	10	19	8	18	17	5	15	3	14
Science	15	12	16	13	14	16	9	17	6	15

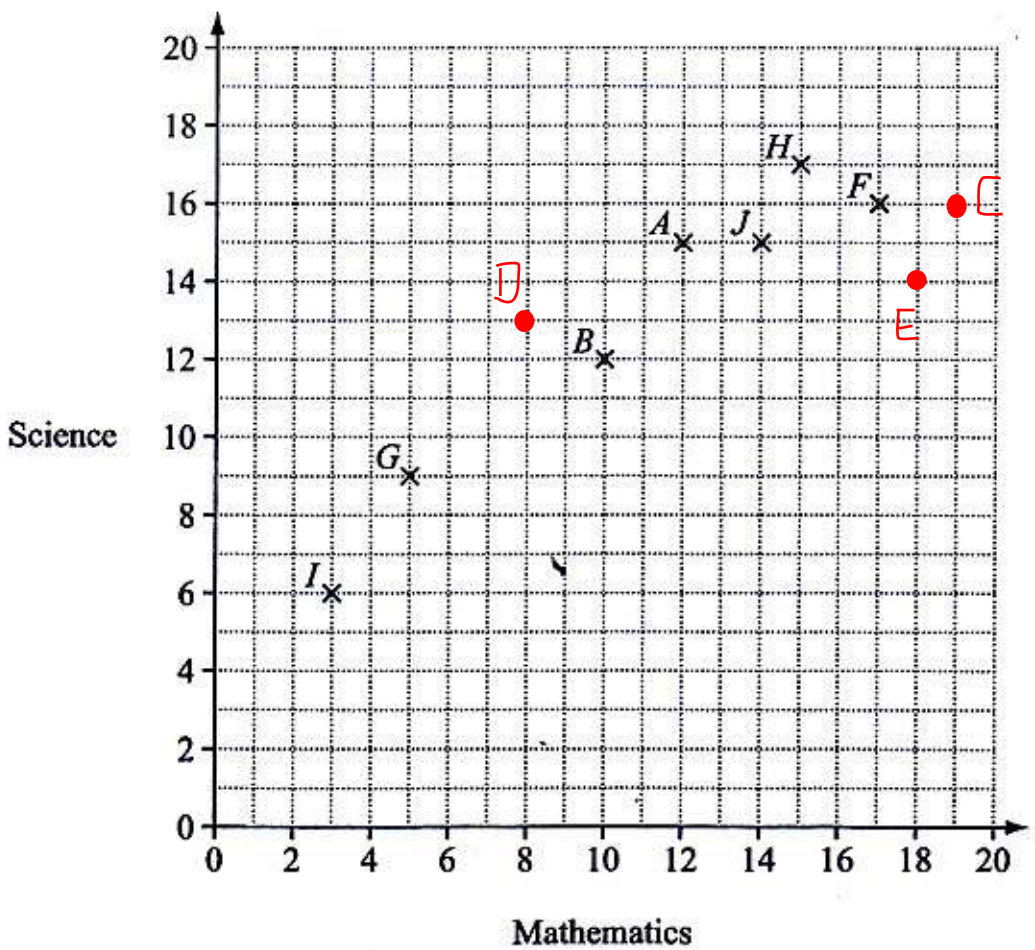
$\Sigma = 121$

$\Sigma = 133$

(a) Calculate the mean score for mathematics.

$\frac{121}{10} = 12.1$ [2]

(b) Complete the scatter graph by showing the scores of students C, D and E.

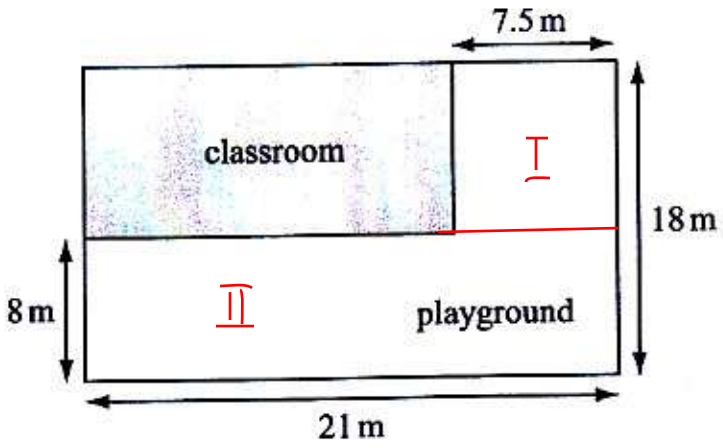


[1]

(c) Describe the correlation between the mathematics and the science scores.

Linear, maths ↑ Science also ↑ [1]

12 (a) Tania has drawn a plan of her school.



NOT TO SCALE

Work out the area of the playground.

$A_I = 7.5 \times 10 = 75\ m^2$

$A_{II} = 8 \times 21 = 168\ m^2$ +

243 ..... m^2 [2]

(b) The school has a circular sandpit.
It has a radius of 3 metres.

Work out the area of the sandpit.
Use $\pi = 3.14$ or your calculator value.

$A = \pi r^2$

$= 3.14 \times 3^2$

28.26 ..... m^2 [2]

13 The graph of $y = 3x - 2$ passes through the point $(-1, a)$.

x y

(a) Work out the value of a.

$y = 3x - 2$

$a = 3(-1) - 2$

$= -5$

$a =$ -5 [1]

(b) The same graph passes through the point (b, b).

Work out the value of b.

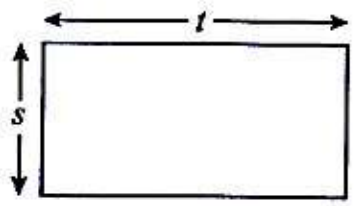
$b = 3b - 2$

$2 = 3b - b$

$2 = 2b$

$b =$ 1 [2]

14 A rectangle has width s and length t.



NOT TO SCALE

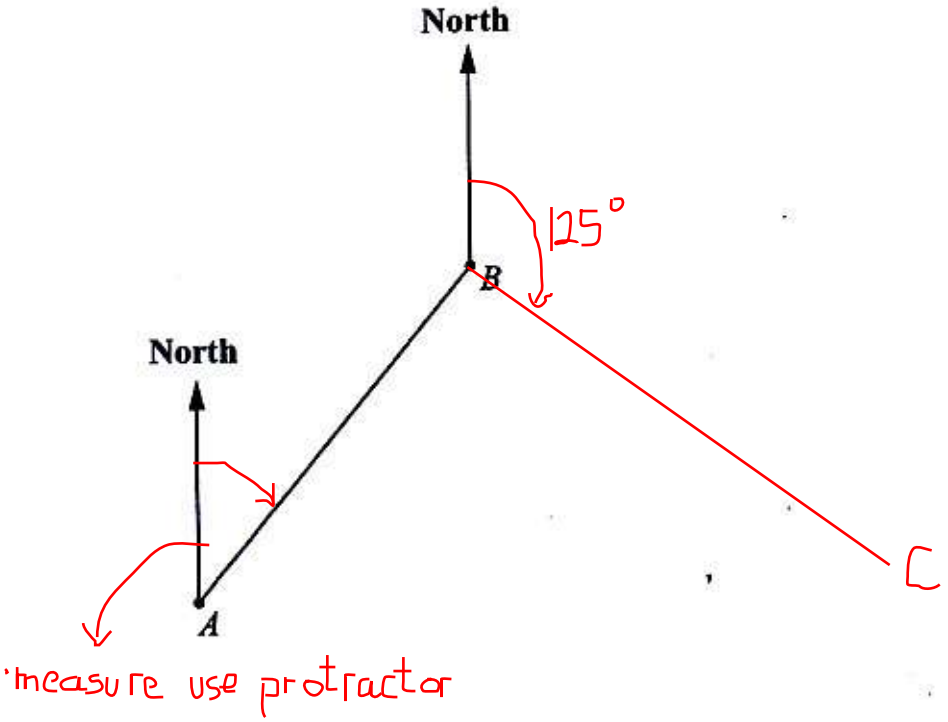
(a) Write down a formula for the **area** A of the rectangle.

$A =$ st [1]

(b) The rectangle has an area of 42 units squared.
Write down a formula for t in terms of s.

$t =$ $\frac{A}{s} = \frac{42}{s}$ [1]

15 The diagram, which is drawn accurately, represents the path taken by a walker.



measure use protractor

(a) Measure and write down the bearing of B from A.

40 ° [2]

1 centimetre on the diagram represents 2 kilometres.

(b) (i) Measure and write down the distance from A to B.

5.6 - 5.7 cm [1]

(ii) Work out the actual distance in kilometres.

5.6 x 2 = 11.2 - 11.4 km [1]

5.7 x 2

At B the walker turns onto a bearing of 125°.
He walks a further 11 km to a point C.

(c) On the diagram above, plot this journey from B to C.
Label clearly the point C. [2]

11 km = $\frac{11}{2}$ = 5.5 cm

16 Sanjit collects some data about the ages of people at a cinema one day.

He asks 10 people watching film A and 10 people watching film B.

(a) Is the data Sanjit collects Primary or Secondary data?
Give a reason for your answer.

Primary , because he collects the data of ages directly from people he asks [1]

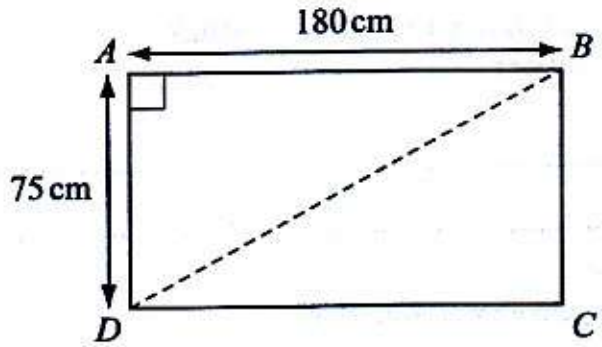
(b) This stem-and-leaf diagram shows Sanjit's data.

Film A					Film B			
			2	2	3	7		
	8	8	4	3	4	7	8	
	9	6	4	4	2	3	3	8
9	9	8	2	5				

Make **one** statement to compare the ages of people attending Film A and Film B.

..... [1]

17 The diagram shows a rectangular table.



NOT TO SCALE

Use Pythagoras' theorem to work out the distance *BD*.

$BD = \sqrt{180^2 + 75^2}$

$= 195$ cm

195 cm [2]

18 The equation $x^2 + 3x = 30$ has a solution between 4 and 5.
Use trial and improvement to find this solution.
Give your answer to 1 decimal place.

Show your working in the table.
The first line is done for you.
You may not need to use all the lines.

x	$x^2 + 3x =$	Comment
4	*16 + 12 = 28*	*too small*
5	25 + 15 40	too big
4.1	16.81 + 12.3 = 29.11	0.89 different with 30
4.2	17.64 + 12.6 = 30.24	0.24 different with 30

$x =$ 4.2 [4]